SBC84830 Series

Intel® Core™ Duo All-In-One ECX Board

User's Manual

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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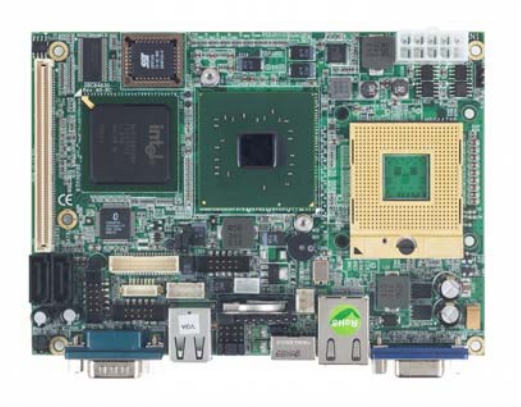
Chapter 1
Introduction



The **SBC84830**, an ECX board, supports Intel® Core™ Duo and Core™ Solo processors with graphics, audio, and Gigabit Ethernet interfaces. It is practically finest embedded Socket M board in the market. It integrates LPC I/Os, UXGA, LCD, Ethernet and audio to make all in one single board. Additionally, it provides you with unique embedded features, such as onboard two RS232 serial ports and ECX form factor that applies an extensive array of PC peripherals. This industrial-grade board can achieve the best stability and reliability that makes your system perform the most endurable operation in any critical environments. The built-in Watchdog Timer has enhanced the system reliability that achieves a unique feature to distinguish itself from other boards.
Designed for the professional embedded developers, the Socket M embedded board SBC84830 Series is virtually ultimate one-step solution for embedded system applications.

1.1 Specifications

- **CPU: Socket M (478) for Intel® Core™ Duo and Core™ Solo processors**
- **System Chipset: Intel® 945GM & ICH7M**
- **CPU Frequency: 533/667MHz FSB**
- **BIOS**
  - Phoenix-Award BIOS, Y2K compliant
  - 4Mbit Flash, DMI, Plug and Play
  - PXE Ethernet Boot ROM
  - SmartView for multiple LCD type selection, display mode option and application extension features
  - RPL/PXE Ethernet Boot ROM
  - "Load Optimized Default" to backup customized Setting in the BIOS flash chip to prevent from CMOS battery fail
- **System Memory**
  - One x 200-pin DDR2-400/533/667 SDRAM SODIMM sockets
  - Maximum to 2GB DDR2 memory
- **L2 Cache:** integrated in CPU
- **Onboard IDE**
  - Two SATA-300 connectors
- **Compact Flash Socket**
  - One Compact Flash Type II Socket (optional)
- **Onboard Multi-I/O**
  - Onboard 2 x RS-232 serial ports
- **USB Interface**
  - Four USB ports with fuse protection and complies with USB Spec. Rev. 2.0
- **Watchdog Timer**
  - 1~255 seconds; up to 255 levels

- **Graphics**
  - Intel® 945GM GMCH Gen 3.5 integrated graphic engine
  - CRT interface for external display devices
  - Maximum up to 224MB frame buffer sharing system memory
  - Maximum display resolution:
    - CRT: 2048 x1536
    - LVDS: 1600 X1200 (24-bit single/dual channel LVDS interface)
  - LCD backlight control supported
- **Expansion Slot**
  - ECX expansion interface with SDVO B/C, LPC, two PCI and one PCIe X1
- **Ethernet**
  - One RTL8111B Gigabit Ethernet
  - Wake On LAN (via ATX power supply)
  - Equipped with RJ-45 interface
- **Audio**
  - Realtek AC'97 codec audio
  - MIC-in, Line-out
- **Power Management**
  - ACPI (Advanced Configuration and Power Interface)
- **Form Factor**
  - **ECX form factor**

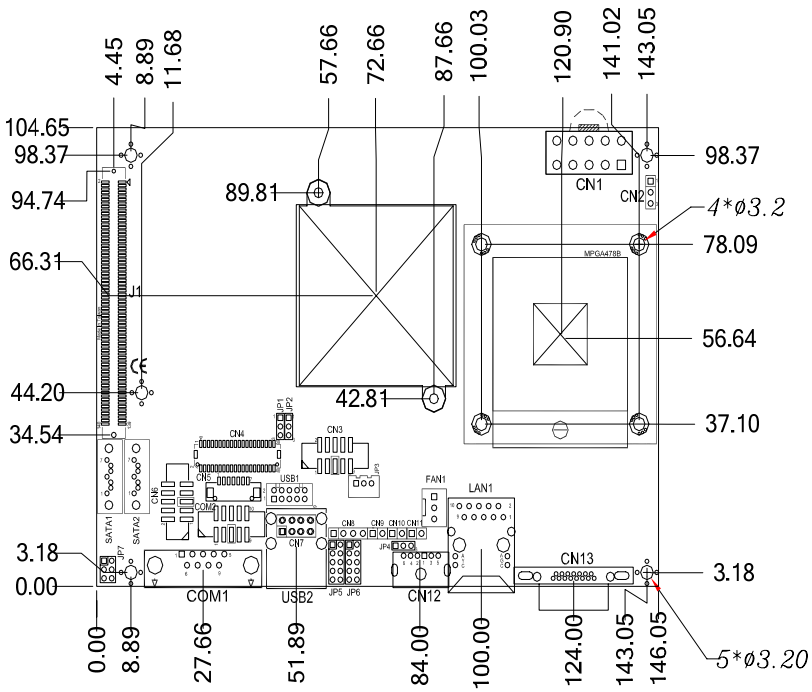
***NOTE**: Specifications are subject to change without notice.*

1.2 Utilities Supported

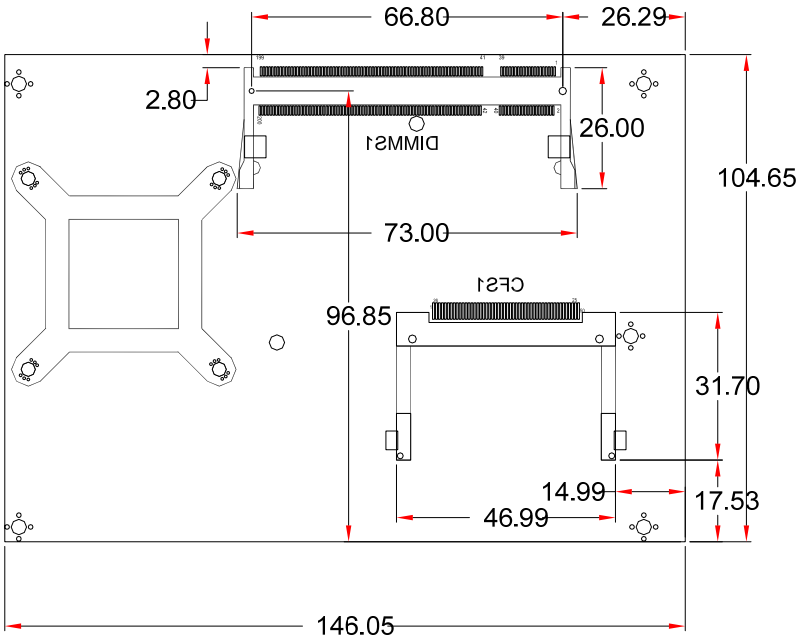
- Chipset Driver
- VGA Driver
- Ethernet Driver
- Audio Driver

Chapter 2
Jumpers and Connectors

2.1 Board Layout and Fixing Holes

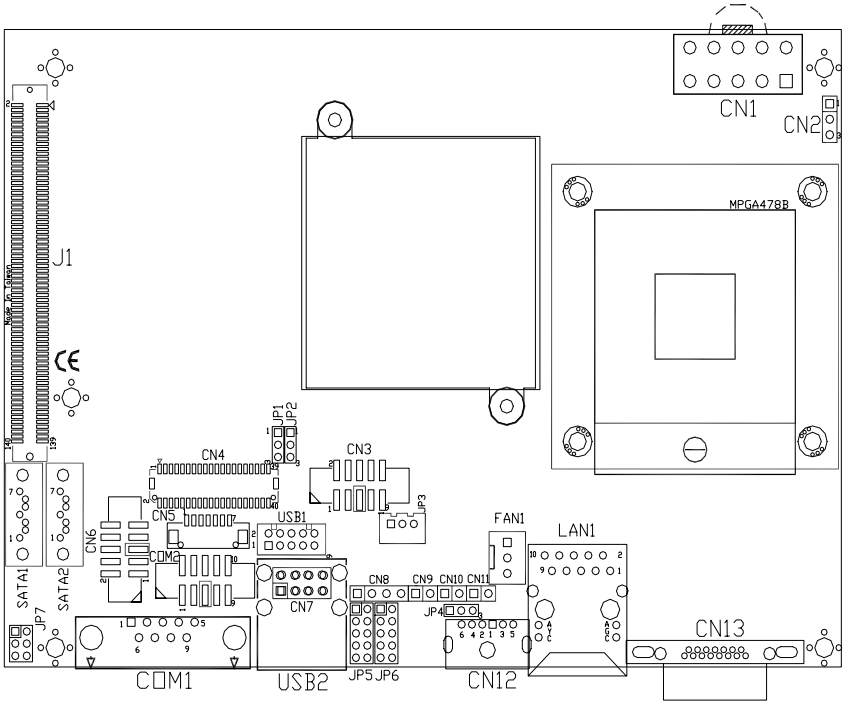


Component Side



Solder Side

2.2 Placement



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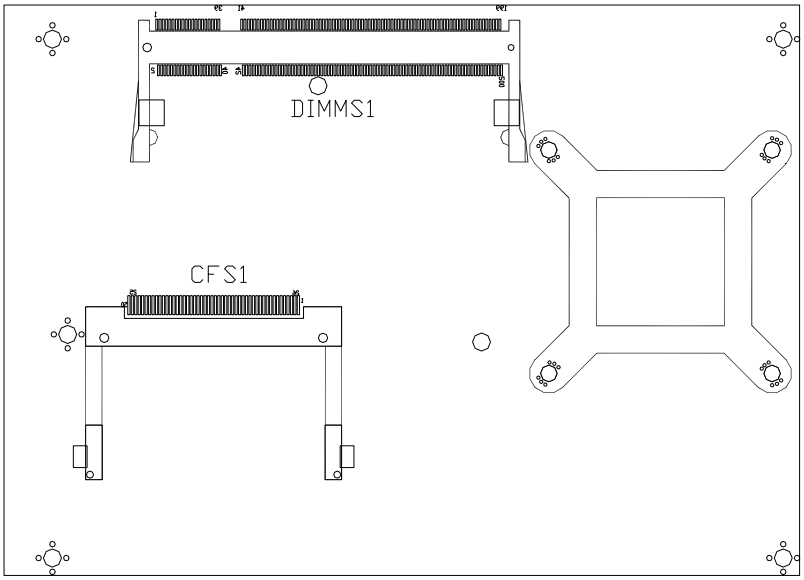


Solder Side

2.3 Jumper Settings

Proper jumer settings configure the **SBC84830** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Here is a list of jumper settings：

Jumper	Default Setting		Jumper Setting
JP1	LVDS Voltage Selection Default: 3.3V		Short 1-2
JP2	Compact Flash Voltage Selection Default: 3.3V		Short 1-2
JP4	Normal Operation/Clear CMOS setting Default: Normal Operation		Short 1-2
JP5	COM2 Mode Select	COM2 Pin 1: DCD	Short 7-9
		COM2 Pin 8: RI	Short 8-10
JP6	COM1 Mode Select	COM1 Pin 1: DCD	Short 7-9
		COM1 Pin 9: RI	Short 8-10
JP7	Audio Speak Out/Line Out Selection Default: Line Out		Short 1-3,2-4

2.3.1 LVDS Voltage Selection Jumper: JP1

This jumper is to select the voltage for LVDS interface.

Options	Settings
3.3V	Short 1-2 (default)
5V	Short 2-3

2.3.2 Compact Flash Voltage Selection Jumper: JP2

This jumper is to select the voltage for Compact Flash interface.

Options	Settings
3.3V	Short 1-2 (default)
5V	Short 2-3

2.3.3 CMOS Clear Jumper: JP4

You may need to use this jumper to clear the CMOS memory if incorrect settings in the Setup Utility.

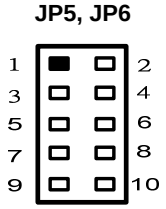
Options	Settings
Normal	Short 1-2 (default)
Clear CMOS	Short 2-3

2.3.4 COM1, COM2 Mode Jumpers: JP5, JP6

These jumpers select the COM1, COM2 ports' communication mode to operate RS-232 or RS-422/485.

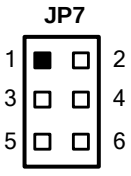
COM1 (COM1)	JP6
Pin 1=12V	Short 1-3
Pin 1=5V	Short 3-5 or 5-7
*Pin 1=DCD	Short 7-9
Pin 9=12V	Short 2-4
Pin 9=5V	Short 4-6 or 6-8
*Pin 9=RI	Short 8-10

COM2 (COM2)	JP5
Pin 1=12V	Short 1-3
Pin 1=5V	Short 3-5 or 5-7
*Pin 1=DCD	Short 7-9
Pin 8=12V	Short 2-4
Pin 8=5V	Short 4-6 or 6-8
*Pin 8=RI	Short 8-10



2.3.5 Audio Output Selection Jumper: JP7

Options	Settings
Line-out	Short 1-3,2-4(default)
Speak-out	Short 3-5,4-6



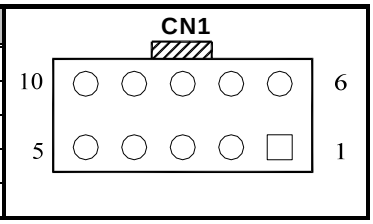
2.4 Connectors

Connectors connect the CPU card with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors on the SBC84830 Series.

Connectors	Label
Power Connector	CN1
Front Panel Connector (Power LED)	CN2
2*5pin DIO Connector	CN3
LVDS Connector	CN4
LVDS Backlight Connector	CN5
Audio Connector	CN6
Front Panel Connector (Buzzer)	CN8
HDD Activity LED Connector	CN9
System Reset Switch Connector	CN10
Power Button	CN11
PS/2 Connector	CN12
VGA Connector	CN13
COM1 Connector	COM1
COM2 Connector	COM2
Ethernet Connector	LAN1
Extension Slot	J1
SMBus Connector	JP3
SATA1 Connector	SATA1
SATA2 Connector	SATA2
USB2, USB3 Connector	USB1
USB0, USB1 Connector	USB2
CPU Fan Connector	FAN1
CF Connector	CFS1
DDRII RAM Connector	DIMMS1

2.4.1 Power Connector: CN1

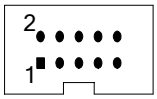
Pin	Signal	Pin	Signal
1	PS_ON	2	GND
3	GND	4	+12V
5	N.C.	6	+SB5V
7	+5V	8	+5V
9	-12V	10	GND



2.4.2 Digital I/O Port (DIO) Connector: CN3

The board is equipped a digital I/O connector CN5 that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming.

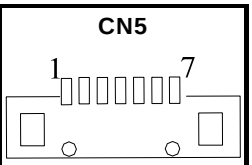
Pin	Signal	Pin	Signal
1	Out-0	2	In-0
3	Out-1	4	In-1
5	Out-2	6	In-2
7	Out-3	8	GND
9	Out-4	10	GND



2.4.3 LVDS Blacklight Connector: CN5

It is a video connector for working LVDS interface backlight.

PIN	Signal
1	12V
2	12V
3	5V
4	L_BLKEN
5	GND
6	GND
7	GND

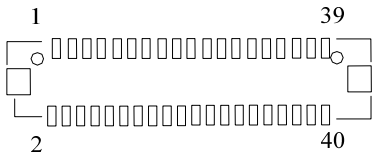


2.4.4 LVDS Flat Panel Connector: CN4

The LVDS interface which is with 40-pin connector supports 18/24-bit single/dual channel type of LCD.

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	
31	Channel A D1+	32	
33	GND	34	
35	Channel A D2-	36	
37	Channel A D2+	38	
39	GND	40	GND

CN4



Remark: The LVDS connector on the SBC is a 40-pin connector. The matching connector is strongly recommended to use JST SHDR-40V-S-B.

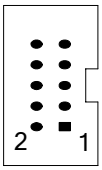
The 7-pin inverter connector on the SBC is with Hirose connector. The matching connector is strongly recommended to use Hirose DF13-7S-1.25C.

2.4.5 Audio Connector: CN6

The board supports audio interface.CN6 is a 10pin-header connector commonly used for the audio.

Pin	Signal	Pin	Signal
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND

CN6



2.4.6 Power Button: CN11

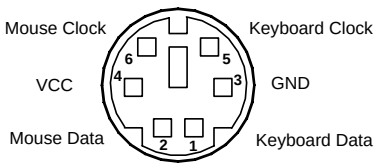
This 2-pin connector connects the ATX power button of the front panel to the SBC84830 CPU card that allows users to control power on/off state of the ATX power supply.

2.4.7 Keyboard and PS/2 Mouse Connector: CN12

CN12 is a DIN connector (AC97) for PS/2 Mouse and PS/2 keyboard connection.

Pin	Signal
1	Keyboard Data
2	Mouse Data
3	GND
4	VCC
5	Keyboard Clock
6	Mouse Clock

CN12

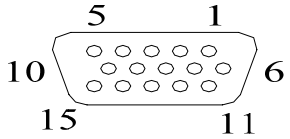


2.4.8 VGA Connector: CN13

CN13 is a standard 15-pin pin DB15 connector commonly used for the CRT VGA display. Please refer to the pin assignment next page.

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N/A	5	GND	6	AGND
7	AGND	8	AGND	9	N/A
10	GND	11	N/A	12	DDC DAT
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK

CN13

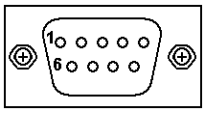


2.4.9 Serial Port Interface Connectors: COM1, COM2

The board has four onboard serial ports and +5V/12V power on pins 1 and 8 or pin 9, depending on jumper selection. COM1 is a standard DB9 connector, and COM2 a combo connector. The pin assignment is listed as below:

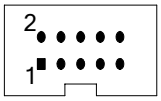
COM1	Description
1	Data Carrier Detect (DCD)
2	Data Set Ready (DSR)
3	Receive Data (RXD)
4	Request to Send (RTS)
5	Transmit Data (TXD)
6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)
8	Ring Indicator (RI)
9	Ground (GND)

COM1



COM2	Description
1	Data Carrier Detect (DCD)
2	Data Set Ready (DSR)
3	Receive Data (RXD)
4	Request to Send (RTS)
5	Transmit Data (TXD)
6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)
8	Ring Indicator (RI)
9	Ground (GND)
10	N.C.

COM2



2.4.10 Flat Panel Bezel Connectors: CN2, CN8, CN9, CN10

- **Power LED :CN2**

This 3-pin connector, designated as Pins 1, 2 and 3, connects the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 2 and 3 as -. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector :CN8**

Pin 1, 2, 3 and 4 of CN8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 1-2; while connecting to an external speaker, you need to set these jumpers to Open and connect the speaker cable to pin 3 (+) and pin 4 (-).

- **HDD Activity LED :CN9**

This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pins 1 and 2 of CN9 can be connected to the hard disk drive and the front panel HDD LED. Pins 2 is assigned as -, and Pin1 as +.

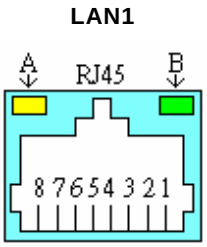
- **System Reset Switch :CN10**

Pins 1 and 2 of CN10 can be connected to the case-mounted reset switch that reboots your computer, not turns OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

2.4.11 Ethernet Connector: LAN1

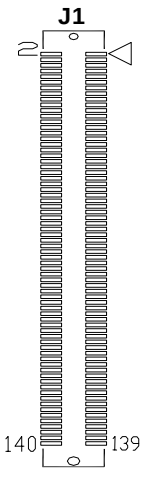
The RJ-45 connector is used for Ethernet. To connect the board to 100-Base-T or 1000-Base-T hub, just plug one end of the cable into LAN1 and connect the other end (phone jack) to a 100-Base-T hub or 1000-Base-T hub.

Pin	Signal
1	Tx+ (Data transmission positive)
2	Tx- (Data transmission negative)
3	Rx+(Data reception positive)
4	RJ-1(For 100 base T-Only)
5	RJ-1(For 100 base T-Only)
6	Rx- (Data reception negative)
7	RJ-1(For 100 base T-Only)
8	RJ-1(For 100 base T-Only)
A	Active LED
B	100/1000 LAN LED



2.4.12 Extension Slot: J1

Pin	Signal	Pin	Signal
1	SDVOC_RED	2	SDVOC_INT
3	SDVOC_RED#	4	SDVOC_INT#
5	GND	6	GND
7	SDVOC_BLUE	8	SDVOC_GREEN
9	SDVOC_BLUE#	10	SDVOC_GREEN#
11	GND	12	GND
13	SDVO_FLDSTALL	14	SDVOC_CLK
15	SDVO_FLDSTALL#	16	SDVOC_CLK#
17	GND	18	GND
19	BKLCTL2	20	SDVO_CTRLCLK
21	PCIE_WAKE#	22	SDVO_CTRLDATA
23	GND	24	GND
25	ICH_PE_TXP2	26	ICH_PE_RXP2
27	ICH_PE_TXN2	28	ICH_PE_RXN2



Pin	Signal	Pin	Signal
29	GND	30	GND
33	+12V	34	CLK_100M_PCIE0#
35	+12V	36	GND
37	+12V	38	PWR_PSON#
39	SIO1_RI	40	+5V_SBY
41	LPC_FRAME#	42	LPC_AD0
43	LPC_DRQ1#	44	LPC_AD1
45	GND	46	LPC_AD2
47	CLK_33M_SIO2	48	LPC_AD3
49	GND	50	INT_SERIRQ
51	INT_PIRQE#	52	+3.3V
53	INT_PIRQG#	54	SMB_DATA_S
55	PCI_REQ2#	56	SMB_CLK_S
57	GND	58	GND
59	CLK_33M_PCI2	60	CLK_48M_SIO2
61	GND	62	GND
63	PCI_REQ1#	64	CLK_33M_PCI1
65	+5V	66	GND
67	PCI_GNT1#	68	INT_PIRQF#
69	PCI_AD31	70	PCI_GNT2#
71	PCI_AD29	72	+5V
73	PCI_AD27	74	P_PLT_RST#
75	PCI_AD25	76	GND
77	+3.3V	78	PCI_PME#
79	PCI_C/BE3#	80	PCI_AD30
81	PCI_AD23	82	PCI_AD28
83	GND	84	PCI_AD26
85	PCI_AD21	86	GND
87	PCI_AD19	88	PCI_AD24
89	+3.3V	90	PCI_AD22
91	PCI_AD17	92	PCI_AD20
93	PCI_C/BE2#	94	GND
95	PCI_IRDY#	96	PCI_AD18
97	PCI_DEVSEL#	98	PCI_AD16

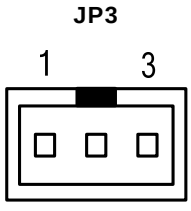
Pin	Signal	Pin	Signal
99	GND	100	+3.3V
103	+3.3V	104	PCI_TRDY#
105	PCI_SERR#	106	PCI_STOP#
107	PCI_C/BE1#	108	+3.3V
109	PCI_AD14	110	PCI_PAR
111	GND	112	PCI_AD15
113	PCI_AD12	114	PCI_AD13
115	PCI_AD10	116	PCI_AD11
117	GND	118	GND
119	PCI_AD8	120	PCI_AD9
121	PCI_AD7	122	PCI_C/BE0#
123	+3.3V	124	+3.3V
125	PCI_AD5	126	PCI_AD6
127	PCI_AD3	128	PCI_AD4
129	GND	130	PCI_AD2
131	PCI_AD1	132	PCI_AD0
133	+5V	134	+5V
135	+5V	136	+5V
137	IO_PME#	138	LAN_WAKE2
139	+3.3V_SBY	140	+3.3V_SBY

-- End of Extension Slot J1 Table --

2.4.13 SM BUS Connector: JP3

This SM Bus connector is for users to connect System Management Bus (SMBus) interface.

Pin	Signal
1	CLOCK
2	DATA
3	GND

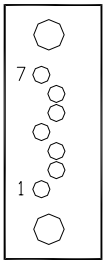


2.4.14 SATA Connectors: SATA1/SATA2

These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

Pin	Signal
1	GND
2	STXP
3	STXN
4	GND
5	SRXN
6	SRXP
7	GND

SATA1/SATA2



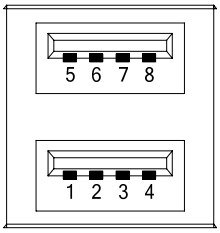
2.4.15 USB Connector: USB2

The Universal Serial Bus (USB) connector on the board is for the installation of peripherals supporting the USB interface. USB2 is a 12-pin standard USB connector.

USB0 and USB1

Pin	Signal
1,5	USB Vcc
2,6	USB -
3,7	USB +
4,8	USB GND

USB2

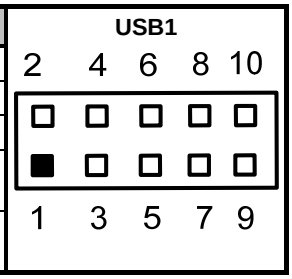


2.4.16 USB Connector: USB1

The Universal Serial Bus (USB) connector on the board is for the installation of peripherals supporting the USB interface. USB1 is a 12-pin standard USB connector. Please refer to the USB1 pin assignment next page.

USB2 and USB3

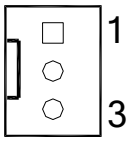
Pin	Signal	Pin	Signal
1	VCC	2	VCC
3	D2-	4	D3-
5	D2+	6	D3+
7	Ground (GND)	8	Ground (GND)
9	Ground (GND)	10	Ground (GND)



2.4.17 CPU Fan Connector: FAN1

A CPU fan is always needed for cooling CPU heat. The CPU fan connector FAN1 provides power to the CPU fan. You can connect the CPU cooling fan cable to FAN1.

Pin	Signal
1	GND
2	+12V
3	Sensor



2.4.18 Compact Flash Connector: CFS1

The SBC84830 Series is equipped with a CompactFlash disk socket on the solder side and it supports the IDE2 interface CompactFlash disk card. The socket itself is specially designed to prevent any incorrect installation of the CompactFlash disk card.

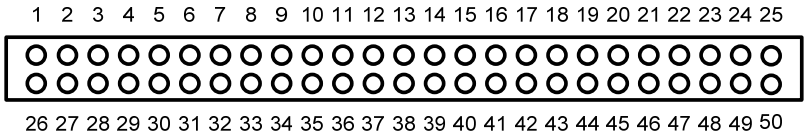
When installing or removing the CompactFlash disk card, make sure the system power is off.

The CompactFlash disk card is defaulted as the E: or F: disk drive in the PC system.

CFS1: Compact Flash Socket Pin Assignment

Pin	Signal	Pin	Signal
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0#	32	CS1#
8	Address 10	33	VS1#
9	ATASEL	34	IORD#
10	Address 9	35	IOWR#
11	Address 8	36	WE#
12	Address 7	37	INTR
13	VCC	38	VCC
14	Address 6	39	CSEL#
15	Address 5	40	VS2#
16	Address 4	41	RESET#
17	Address 3	42	IORDY#
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP#
21	Data 0	46	PDIAG#
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16#	49	Data 10
25	CD2#	50	GND

CFS1: Compact Flash Socket



Chapter 3
Hardware Description

3.1 Microprocessors

The SBC84830 Series supports Intel® Core™ Duo and Core™ Solo processors, which make your system operated under Windows 2000/XP and Linux environments. The system performance depends on the microprocessor. Make sure your installed microprocessor with all correct settings that prevents the CPU from damages.

3.2 BIOS

The SBC84830 Series uses Award Plug and Play BIOS with a single 4Mbit Flash EPROM.

3.3 System Memory

The SBC84830 Series industrial CPU card supports one 200-pin DDR2 DIMM sockets for a maximum memory of 2GB DDR2 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB, 1GB and 2GB.

3.4 I/O Port Address Map

The Intel® Core™ Duo and Core™ Solo processors can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
040-05F	Timer
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0A0-0BF	Interrupt controller #2
0C0-0DF	DMA controller #2
0F0	Clear math coprocessor busy signal
0F1	Reset math coprocessor
0F8-0FF	Math processor
1F0-1F8	Fixed disk controller
250-25F	HR I/O
300-31F	Prototype card
380-38F	SDLC #2
3A0-3AF	SDLC #1
3B0-3BF	MDA video card (including LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Serial port #3 (COM3)
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Serial port #4 (COM4)
3F0-3FF	Super I/O

3.5 Interrupt Controller

The SBC84830 Series is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

IRQ	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	PCI Device Share
IRQ7	Parallel port #1
IRQ8	Real time clock
IRQ9	ACPI Controller
IRQ10	Serial port #3
IRQ11	Serial port #4
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	—

Chapter 4
Award BIOS Utility

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

4.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

4.2 Control Keys

Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

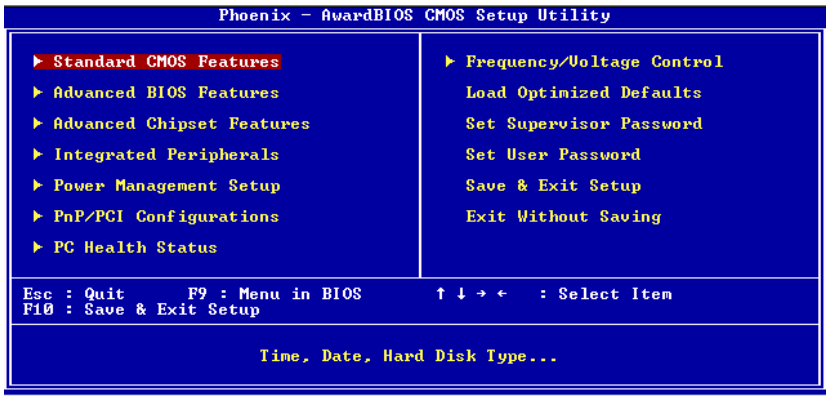
4.3 Getting Help

- **Main Menu**
  The online description of the highlighted setup function is displayed at the bottom of the screen.

- **Status Page Setup Menu/Option Page Setup Menu**
  Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

4.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

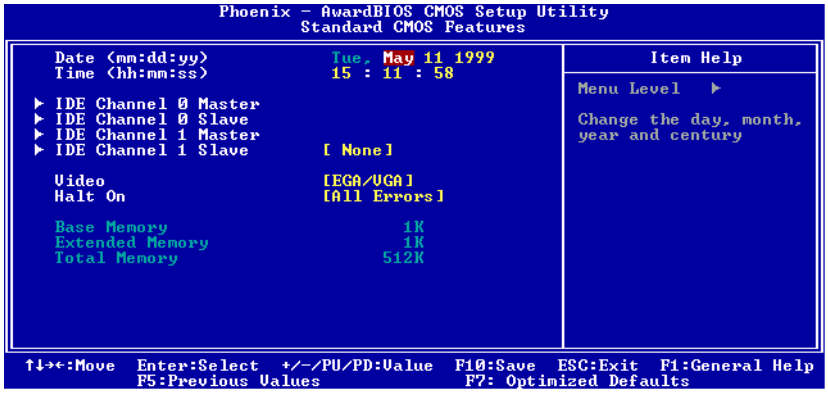


NOTE: *If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.*

It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.5 Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Tue, May 11 1999
Time (hh:mm:ss) 15 : 11 : 58
IDE Channel 0 Master
IDE Channel 0 Slave
IDE Channel 1 Master
IDE Channel 1 Slave [None]
Video [EGA/VGA]
Halt On [All Errors]
Base Memory 1K
Extended Memory 1K
Total Memory 512K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	It is determined by the BIOS and read only, from Sunday to Saturday.
date	It can be keyed with the numerical/ function key, from 1 to 31.
month	It is from January to December.
year	It shows the current year of BIOS.

- **Time**
  This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Channel 0/1 Master/Slave**
  These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.
  If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
  If the HDD interface controller supports ESDI, select "Type 1".
  If the HDD interface controller supports SCSI, select "None".
  If the HDD interface controller supports CD-ROM, select "None".

CYLS.	number of cylinders	**LANDZONE**	landing zone
HEADS	number of heads	**SECTORS**	number of sectors
PRECOMP	write precom	**MODE**	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.

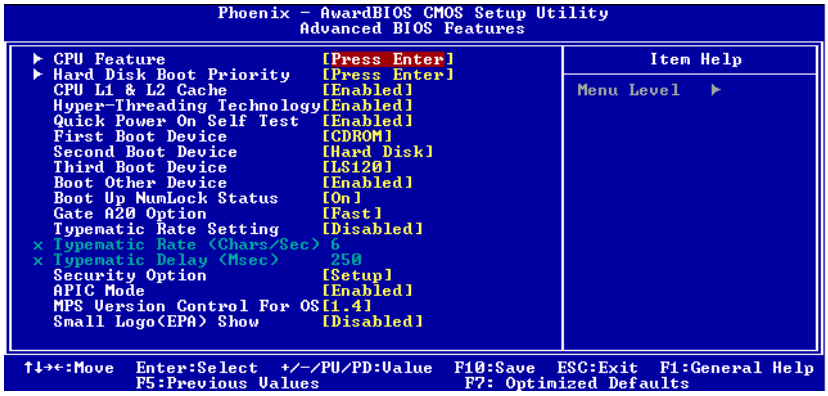
- **Halt On**
  This item determines whether the system will halt or not, if an error is detected while powering up.

No errors	The system booting will halt on any errors detected. (default)
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error; it will stop for other errors.
All, But Diskette	The system booting will not stop for a disk error; it will stop for other errors.
All, But Disk/Key	The system booting will not stop for a keyboard or disk error; it will stop for other errors.

Press <Esc> to return to the Main Menu page.

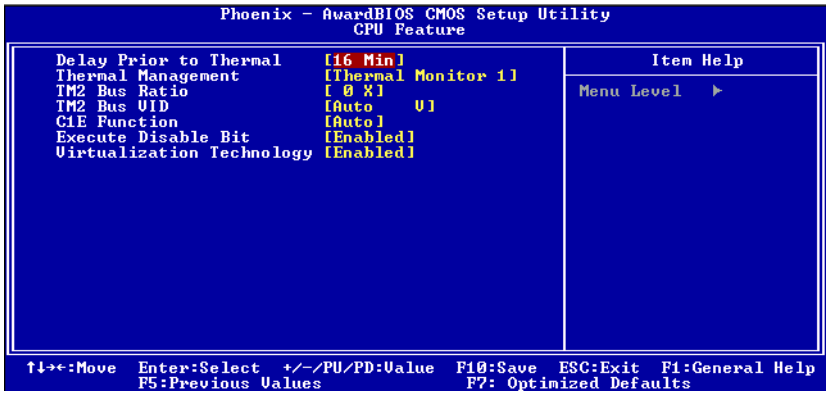
4.6 Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
CPU Feature [Press Enter]
Hard Disk Boot Priority [Press Enter]
CPU L1 & L2 Cache [Enabled]
Hyper-Threading Technology [Enabled]
Quick Power On Self Test [Enabled]
First Boot Device [CDROM]
Second Boot Device [Hard Disk]
Third Boot Device [LS120]
Boot Other Device [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option [Setup]
APIC Mode [Enabled]
MPS Version Control For OS [1.4]
Small Logo(EPA) Show [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

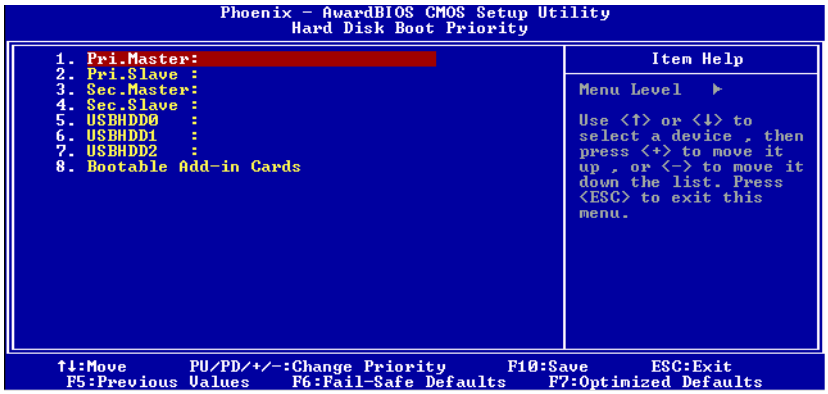
- **CPU Feature**

Scroll to this item and press <Enter> to view the CPU Feature sub menu.


Phoenix - AwardBIOS CMOS Setup Utility
CPU Feature
Delay Prior to Thermal [16 Min]
Thermal Management [Thermal Monitor 1]
TM2 Bus Ratio [0 X]
TM2 Bus VID [Auto V]
C1E Function [Auto]
Execute Disable Bit [Enabled]
Virtualization Technology [Enabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **Hard Disk Boot Priority**

  Scroll to this item and press <Enter> to view the sub menu to decide the disk boot priority.


Phoenix - AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority
1. Pri.Master:
2. Pri.Slave :
3. Sec.Master:
4. Sec.Slave :
5. USBHDD0 :
6. USBHDD1 :
7. USBHDD2 :
8. Bootable Add-in Cards
Item Help
Menu Level ▶
Use <↑> or <↓> to select a device , then press <+> to move it up , or <-> to move it down the list. Press <ESC> to exit this menu.
↑↓:Move PU/PD/+/-:Change Priority F10:Save ESC:Exit
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Press <Esc> to return to the Advanced BIOS Features page.

- **CPU L1 & L2 Cache**
  These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is *"Enabled"*. CPUs without built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

Enabled	Enable cache
Disabled	Disable cache

- **Hyper-Threading Technology**

  Use this item to enable or disable Hyper-Threading Technology, which makes a single physical processor perform multi-tasking function as two logical ones.

- **Quick Power On Self Test**
  This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is *"Enabled"*.

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**
  These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

- **Boot Other Device**

  This item allows users to enable or disable the boot device not listed in the First/Second/Third boot devices option above. The default setting is "*Enabled"*.

- **Boot Up NumLock Status**
  Set the the Num Lock status when the system is powered on. The default value is *"On"*.

- **Gate A20 Option**
  The default value is *"Fast"*.

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

- **Typematic Rate Setting**
  This item determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Enabled	Enable typematic rate and typematic delay programming
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items, controlled by keyboard.

- **Typematic Rate (Chars/Sec)**
  This option refers to character numbers typed per second by the keyboard. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second

24	24 characters per second
30	30 characters per second

-- End of Typematic Rate Table --

- **Typematic Delay (Msec)**
  This option defines how many milliseconds must elapse before a held-down key begins generating repeat characters. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

- **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either.
Setup	If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied.

NOTE: *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **APIC Mode**

  Use this item to enable or disable APIC (Advanced Programmable Interrupt Controller) mode that provides symmetric multi-processing (SMP) for systems.

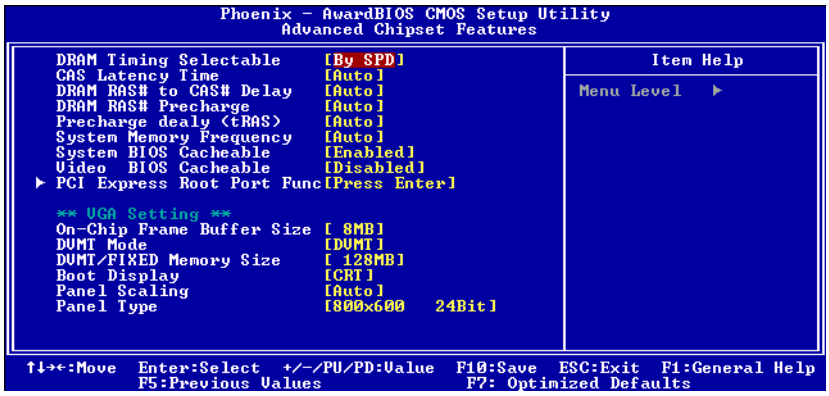
- **MPS Version Control For OS**
  This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.

- **Small Logo <EPA> Show**

If enabled, the EPA logo will appear during system booting up; if disable, the EPA logo will not appear.

4.7 Advanced Chipset Features

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Timing Selectable [By SPD]
CAS Latency Time [Auto]
DRAM RAS# to CAS# Delay [Auto]
DRAM RAS# Precharge [Auto]
Precharge dealy (tRAS) [Auto]
System Memory Frequency [Auto]
System BIOS Cacheable [Enabled]
Video BIOS Cacheable [Disabled]
PCI Express Root Port Func [Press Enter]
** VGA Setting **
On-Chip Frame Buffer Size [8MB]
DVMT Mode [DVMT]
DVMT/FIXED Memory Size [128MB]
Boot Display [CRT]
Panel Scaling [Auto]
Panel Type [800x600 24Bit]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **DRAM Timing Selectable**

  Use this item to increase the timing of the memory. This is related to the cooling of memory.

- **CAS Latency Time**
  You can select CAS latency time to HCLKs 2, 3, or Auto. The board designer should have set up these values in accordance with the installed DRAM. Do not change these values unless you have to change the specifications of the installed DRAM or CPU.

- **DRAM RAS# to CAS# Delay**
  When DRAM is refreshed, both rows and columns are addressed separately. This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed.

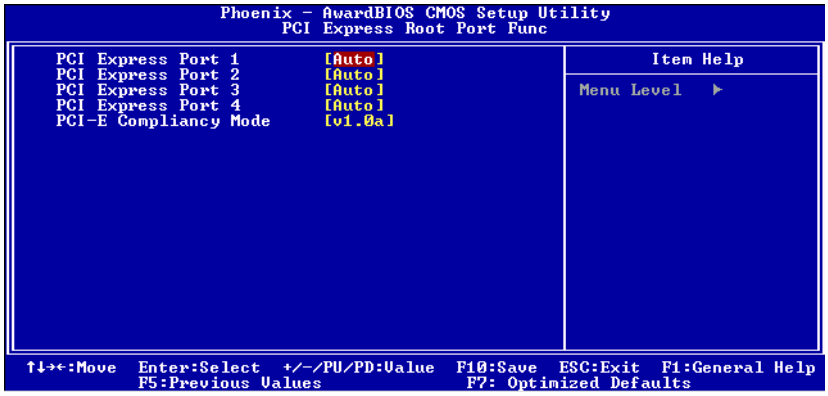
- **DRAM RAS# Precharge**

  The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is

allowed, refresh may be incomplete and the DRAM may fail to retain data.

- **Precharge Delay <tRAS>**
  The precharge time is the number of cycles it takes for DRAM to accumulate its charge before refresh.
- **System Memory Frequency**
  This item helps you set main memory frequency. When using an external graphics card, it can be adjusted to enable the best performance for your system.
- **System BIOS Cacheable**
  Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The default value is *"Disabled"*.
- **Video BIOS Cacheable**
  This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.
- **PCI Express Root Port Func**

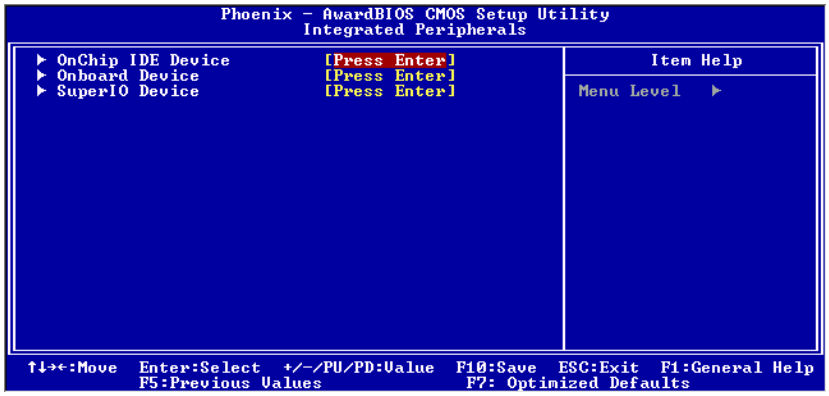
  Scroll to this item and press <Enter> to view the sub menu to decide the PCI Express Port.


Phoenix - AwardBIOS CMOS Setup Utility
PCI Express Root Port Func
PCI Express Port 1 [Auto]
PCI Express Port 2 [Auto]
PCI Express Port 3 [Auto]
PCI Express Port 4 [Auto]
PCI-E Compliancy Mode [v1.0a]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

Press <Esc> to return to the Advanced Chipset Featurs page, and press it again, return to the Main Menu page.

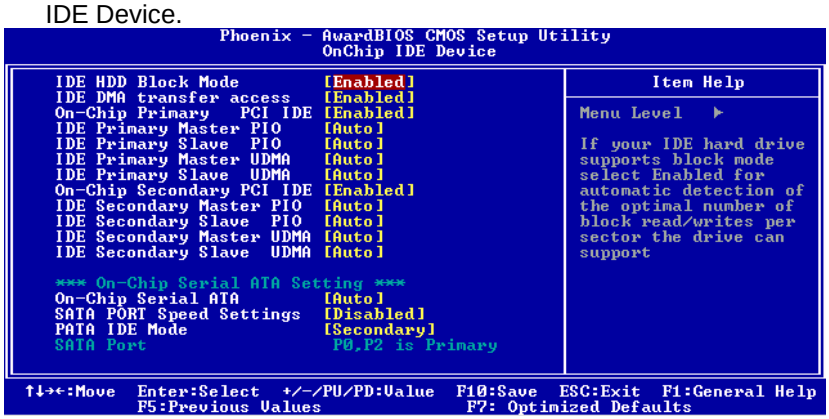
4.8 Integrated Peripherals

This section allows you to configure your SuperIO Device, IDE Function and Onboard Device.


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
OnChip IDE Device [Press Enter]
Onboard Device [Press Enter]
SuperIO Device [Press Enter]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **OnChip IDE Device**

  Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.


Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device
IDE HDD Block Mode [Enabled]
IDE DMA transfer access [Enabled]
On-Chip Primary PCI IDE [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Primary Master UDMA [Auto]
IDE Primary Slave UDMA [Auto]
On-Chip Secondary PCI IDE [Enabled]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Secondary Master UDMA [Auto]
IDE Secondary Slave UDMA [Auto]
*** On-Chip Serial ATA Setting ***
On-Chip Serial ATA [Auto]
SATA PORT Speed Settings [Disabled]
PATA IDE Mode [Secondary]
SATA Port P0,P2 is Primary
Item Help
Menu Level ▶
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

  - **IDE HDD Block Mode**
    Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

- **IDE DMA transfer access**
  Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.
- **On-Chip Primary/Secondary PCI IDE**
  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is *"Enabled"*.
  ***NOTE**: Choosing Disabled for these options willautomatically remove the IDE rimaryMaster/Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.*
- **IDE Master/Slave PIO**
  The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 to 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
- **IDE Master/Slave UDMA**
  Select the mode of operation for the IDE drive. Ultra DMA-33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and your system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.

***** On-Chip Serial ATA Setting *****

- **On-Chip Serial ATA**

  Use this item to enable or disable the built-in on-chip serial ATA.

- **SATA PORT Speed Settings**

  Use this item to select SATA I or SATA II device support forcedly.

- **PATA IDE Mode**
  Use this item to set the PATA IDE mode. When set to Primary, P1 and P3 are Secondary; on the other hand, when set to Secondary, P0 and P2 are Primary.
  - **Onboard Parallel Port**
    This item is used to assign the I/O address and interrupt

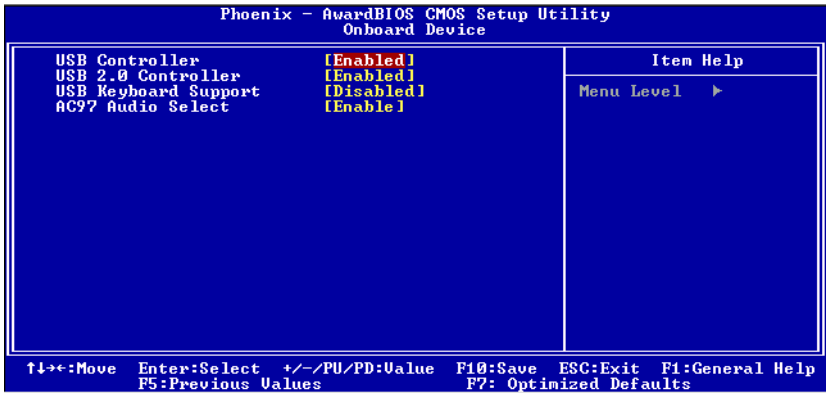
request (IRQ) for the onboard parallel port.

- **SATA Port**
  If the "PATA IDE Mode" is Primary, it will show " P1, P3 is Secondary" which means SATA 2 and SATA 4 are Secondary. If the "PATA IDE Mode " is Secondary, it will show " P0, P2 is Primary " which means SATA 1 and SATA 3 are Primary.

Press <Esc> to return to the Integrated Peripherals page.

- **Onboard Device**

  Scroll to this item and press <Enter> to view the sub menu Onboard Device.

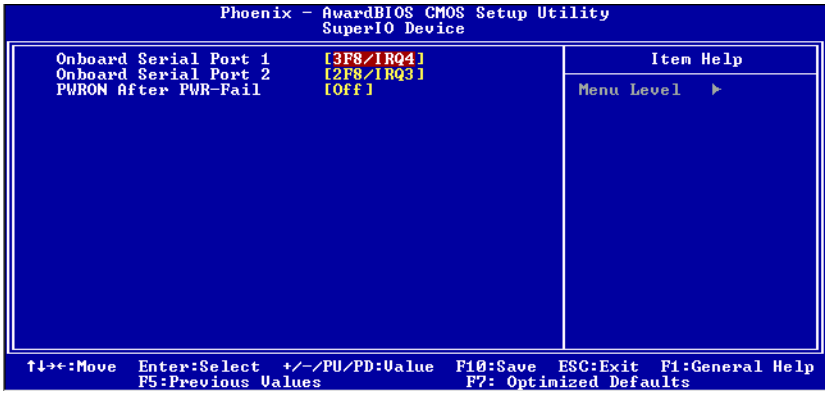

Phoenix - AwardBIOS CMOS Setup Utility
Onboard Device
USB Controller [Enabled]
USB 2.0 Controller [Enabled]
USB Keyboard Support [Disabled]
AC97 Audio Select [Enable]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

  - **USB Controller**
    Enable this item if you are using the USB in the system. You should disable this item if a higher-level controller is added.
  - **USB 2.0 Controller**
    Enable this item if you are using the EHCI (USB2.0) controller in the system.
  - **USB Keyboard Support**
    Enable this item if the system has a Universal Serial Bus (USB) controller, and you have a USB keyboard.
  - **AC'97 Audio Select**
    Use this item to enable or disable the onboard AC'97 Audio function.

Press <Esc> to return to the Integrated Peripherals page.

- **Super IO Device**

  Scroll to this item and press <Enter> to view the sub menu Super IO Device.

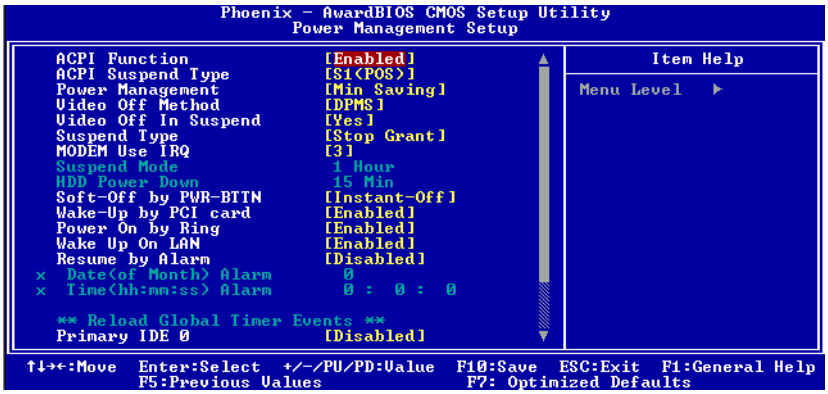

Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
PWRON After PWR-Fail [Off]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

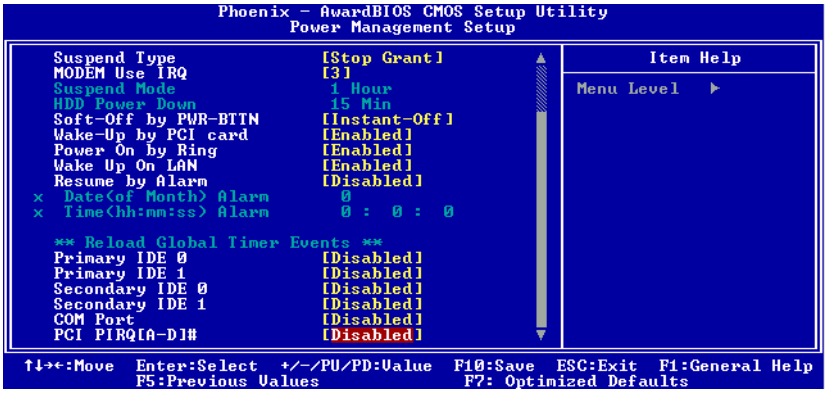
  - **Onboard Serial Port 1 / 2**
    Select an address and corresponding interrupt for the serial port.
  - **PWRON After PWR-Fail**
    This item enables your computer to automatically restart or return to its operating status.

Press <Esc> to return to the Integrated Peripherals page.

4.9 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function [Enabled]
ACPI Suspend Type [S1(POS)]
Power Management [Min Saving]
Video Off Method [DPMS]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
MODEM Use IRQ [3]
Suspend Mode 1 Hour
HDD Power Down 15 Min
Soft-Off by PWR-BTTN [Instant-Off]
Wake-Up by PCI card [Enabled]
Power On by Ring [Enabled]
Wake Up On LAN [Enabled]
Resume by Alarm [Disabled]
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
** Reload Global Timer Events **
Primary IDE 0 [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
Suspend Type [Stop Grant]
MODEM Use IRQ [3]
Suspend Mode 1 Hour
HDD Power Down 15 Min
Soft-Off by PWR-BTTN [Instant-Off]
Wake-Up by PCI card [Enabled]
Power On by Ring [Enabled]
Wake Up On LAN [Enabled]
Resume by Alarm [Disabled]
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
** Reload Global Timer Events **
Primary IDE 0 [Disabled]
Primary IDE 1 [Disabled]
Secondary IDE 0 [Disabled]
Secondary IDE 1 [Disabled]
COM Port [Disabled]
PCI PIRQ[A-D]# [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always "*Enabled*".
- **ACPI Suspend Type**
  This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the

Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

[S1 (POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system contexts.

[S3 (STR)] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

- **Power Management**
  This option allows you to select the type of power Management. Options: APM, ACPI.

- **Video Off Method**
  This setting determines the manner in which the monitor is blanked.

V/H SYNC+Blank	It turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the supplied software for your video subsystem to select video power management values.
Blank Screen	The System only writes blanks to the video buffer.

- **Video Off In Suspend**
  This item defines if the video is powered down when the system is put into suspend mode.

- **Suspend Type**
  If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.

- **Moden Use IRQ**
  If you want an incoming call on a modem to automatically resume the system from a powersaving mode, use this item to specify the interrupt request line (IRQ) used by the modem. You might have to connect the fax/modem to the board Wake On Modem connector for working this feature.

- **Suspend Mode**
  After a selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	The System will never enter the SUSPEND mode.
1/2/4/6/8/10/20/30/40 Min/1 Hr	It defines continuous idle time before the system entering the SUSPEND mode. If any item defined in (J) is enabled and active, the SUSPEND timer will be reloaded.

- **HDD Power Down**
  If HDD activity is not detected for a specified length of time in this field, the hard disk drive will be powered down while other devices remain active.

- **Soft-Off by PWR-BTTN**
  This option only works with systems using an ATX power supply. It also allows users to define which type of soft power OFF sequence the system will follow. The default value is *"Instant-Off"*.

Instant-Off	This option follows the conventional manner of system performance when turning the power to OFF. Instant-Off is a software power OFF sequence requiring the power supply button is switched to OFF.
Delay 4 Sec.	Upon the system's turning OFF through the power switch, this option will delay the complete system power OFF sequence approximately 4 seconds. Within this delay period, the system will temporarily enter into the Suspend Mode enabling you to restart the system at once.

- **Wake-Up by PCI card**
  If enable this item, the system can automatically resume when the PCI Modem or PCI LAN card receives an incoming call.
- **Power On by Ring**
  This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is *"Enabled"*.

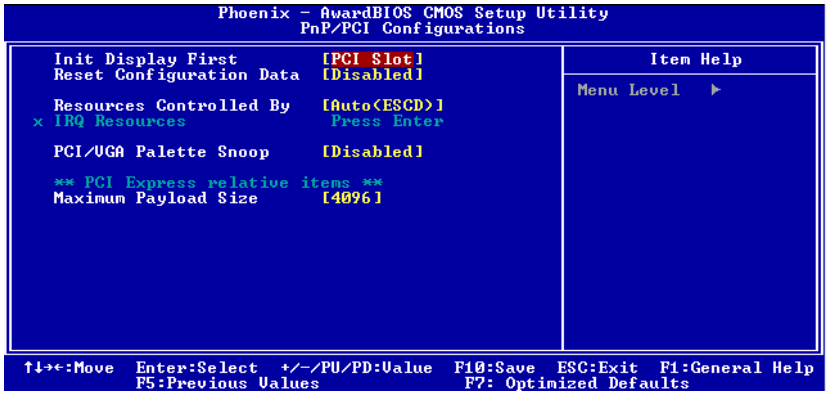
- **Resume by Alarm**
  If enable this item, the system can automatically resume after a fixed time in accordance with the system's RTC (realtime clock).

**** Reload Global Timer Events ****
Global Timer (power management) events can prevent the system from entering a power saving mode or can awaken the system from such a mode.

- **Primary/Secondary IDE 0/1**
  Use this item to configure the IDE devices monitored by the system.
- **COM Port**
  Use this item to configure the COM ports monitored by the system.
- **PCI PIRQ[A-D]#**
  This item can be used to detect PCI device activities; if no activity, the system will enter the sleep mode.

4.10 PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
Init Display First [PCI Slot]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
** PCI Express relative items **
Maximum Payload Size [4096]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **Init Display First**
  This item allows you to decide whether PCI Slot or AGP to be the first primary display card.
- **Reset Configuration Data**
  Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup

or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot. Options: Enabled, Disabled.

- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.

- **IRQ Resources**
  When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:

  1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
  2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

  The default value is *"PCI/ISA PnP"*.

- **PCI/VGA Palette Snoop**
  Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

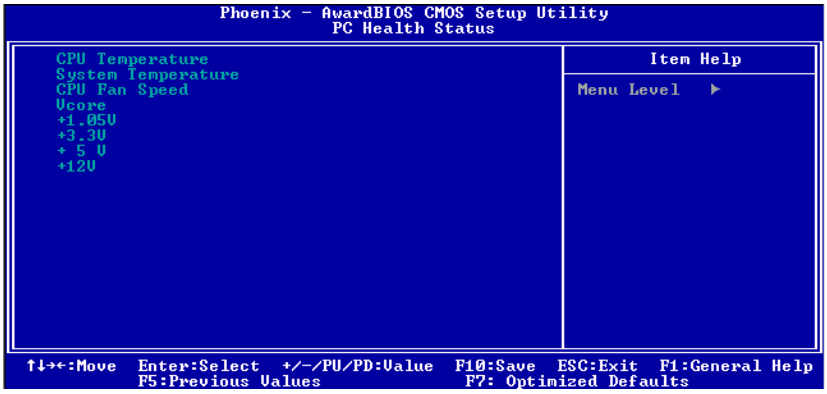
**** PCI Express relative items ****

- **Maximum Payload Size**

  When using DDR SDRAM and Buffer size selection, another consideration in designing a payload memory is the size of the buffer for data storage. Maximum Payload Size defines the maximum TLP (Transaction Layer Packet) data payload size for the device.

4.11 PC Health Status

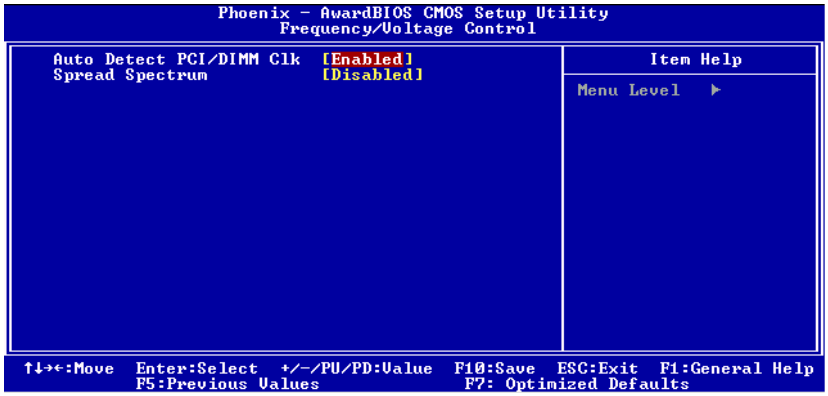
This section supports hardware monitering that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.



- **CPU Temperature**
  The current system CPU temperature will be automatically detected by the system.
- **SYSTEM Temperature**
  Show you the current system1 temperature.
- **CPU FAN Speed**
  These optional and read-only items show current speeds in RPM (Revolution Per Minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.
- **Vcore +3.3V/+5V/+12V/VBAT(V)/5VSB**
  Show you the voltage of +3.3V/+5V/+12V.

4.12 Frequency/Voltage Control

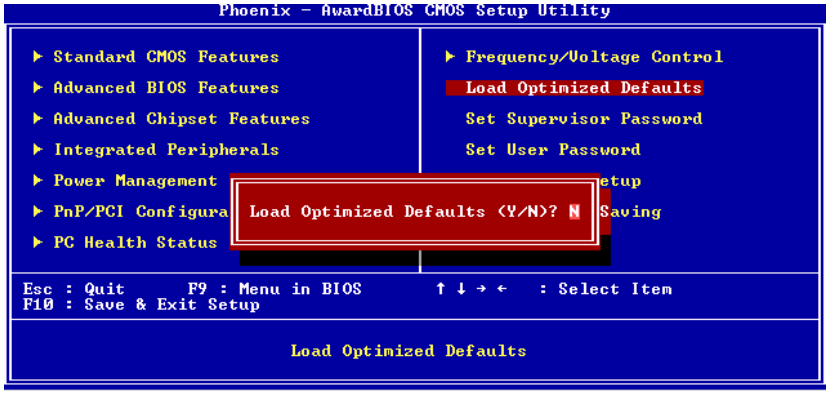
This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.


Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control
Auto Detect PCI/DIMM Clk [Enabled]
Spread Spectrum [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Optimized Defaults

- **Auto Detect PCI Clk**
  The enabled item can automatically disable the clock source for a PCI slot without a module, to reduce EMI (ElectroMagnetic Interference).
- **Spread Spectrum**
  If spread spectrum is enabled, EMI (ElectroMagnetic Interference) generated by the system can be significantly reduced.

4.13 Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.



To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

4.14 Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **User password:** You can just enter, but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

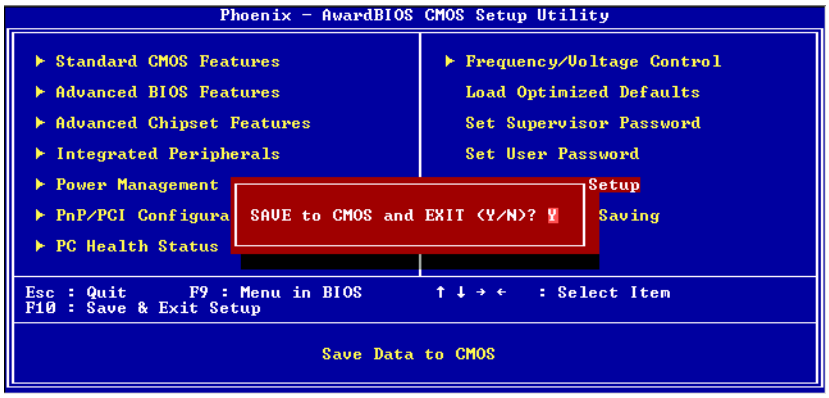
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

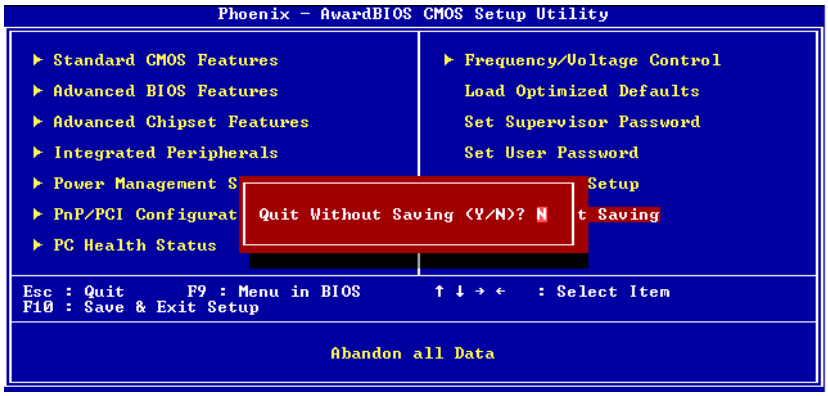
4.15 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Setup utility.



4.16 Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type "Y", and it will quit the Setup utility without saving your modifications. Type "N" to return to the Setup utility.



A p p e n d i x A
Watch Dog Timer

Watchdog Timer Setting

The watchdog timer makes the system auto-reset while it stops working for a period. The integrated watchdog timer can be setup as system reset mode by program.

- Timeout Value Range
  - 1 to 255
  - Second
- Program Sample
  Watchdog Timer can be set to system reset after 5-second timeout.

2E, 87	
2E, 87	
2E, 07	
2F, 00	Logical Device 0
2E, 2B	Set WDT Funtion Enable
2F, 00	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F3	Set Second
2F, N	N = 0 or 4
2E, F4	Set Value
2F, M	M = 00 ~ FF

Using the Watchdog Function

Start
↓
Un-Lock WDT: **O 2E 87 ; Un-lock super I/O**
O 2E 87 ; Un-lock super I/O
↓
Select Logic device:
O 2E 07
O 2F 00
Set WDT Funtion:
O 2E 2B
O 2F C0
Select Logic device:
O 2E 07
O 2F 08
↓
Activate WDT: **O 2E 30**
O 2F 01
↓ **Set Second or Minute:**
O 2E F5
O 2F N **N=00 or 08(See below table)**
↓
Set base timer: **O 2E F6**
O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255
↓
WDT counting
↓
re-set timer: **O 2E F4**
O 2F M ; M=00,01,02,…FF(See below table)
↓
IF No re-set timer: WDT time-out, generate RESET

IF to disable WDT: **O 2E 30**
O 2F 00 ; Can be disable at any time

M	N=0	M	N=0	M	N=0	M	N=4
02	1sec	33	50sec	B5	180sec	11	992sec
03	2sec	38	55sec	BF	190sec	22	2012sec
04	3sec	3D	60sec	C9	200sec	33	3032sec
05	4sec	42	65sec	D3	210sec	43	3992sec
06	5sec	47	70sec	DD	220sec	54	5012sec
07	6sec	4C	75sec	E7	230sec	65	6032sec
08	7sec	51	80sec	F1	240sec	75	6992sec
09	8sec	56	85sec	FB	250sec	86	8012sec
M	**N=0**	**M**	**N=0**	**M**	**N=4**	**M**	**N=4**
0B	10sec	65	100sec	05	272sec	97	9032sec
10	15sec	6F	110sec	06	332sec	A7	9992sec
15	20sec	79	120sec	07	392sec	B8	11012sec
1A	25sec	83	130sec	08	452sec	C9	12032sec
1F	30sec	8D	140sec	09	512sec	D9	12992sec
24	35sec	97	150sec	0A	572sec	EA	14012sec
29	40sec	A1	160sec	0B	632sec	FB	15032sec
2E	45sec	AB	170sec	0C	692sec		

A p p e n d i x B
Digital I/O

Using the Digital I/O Function

Start
↓
Un-Lock SuperI /O:
O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O
↓
Select Enable Digital I/O Function:
O 2E 07
O 2F 00
↓
O 2E 2A
O 2F FC
↓
Select Logic device:
O 2E 07
O 2F 07
↓
Activate Logic Device:
O 2E 30
O 2F 01
↓
Read Data:
O 2E F1
I 2F (default value is E0)

Output Data:
O 2E F1
O 2F FF
Note:
Bit 7~5 => Input pin
Bit 4~0 => Output pin